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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,601	12/09/2003	Scott R. Bickham	SP02-273	4737
22928	7590	11/16/2005	EXAMINER	
CORNING INCORPORATED			RUDE, TIMOTHY L	
SP-TI-3-1			ART UNIT	PAPER NUMBER
CORNING, NY 14831			2883	

DATE MAILED: 11/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

10/731,601

Applicant(s)

BICKHAM ET AL.

Examiner

Timothy L. Rude

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>20010520</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Species C in the reply filed on 29 August 2005 is acknowledged.

Claim 2 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 29 August 2005.

Claim 2 is canceled by Applicant.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mukasa USPAT 6,724,966 B2 provided by Applicant.

As to claim 1, Mukasa discloses a number of embodiments of an optical waveguide fiber. The embodiments of Mukasa comprise a central core region surrounded by an outer cladding region and further comprise one or more of: a central core region having an alpha less than 4, the fiber having a dispersion at a wavelength of about 1550 nm of between about 4 ps/nm/km and about 8 ps/nm/km, and a dispersion slope of less than 0.025 pS/nm.²/km at every wavelength between about 1525 nm and 1650 nm [entire patent, especially tables at col. 13, lines 24-34, col. 14, lines 46-55, col. 16, lines 19-30, col. 17, lines 1-14, col. 20, lines 27-50].

Mukasa does not explicitly disclose the above limitations exactly in a single embodiment.

Mukasa teaches the above limitations as results effective variables [MPEP 2144.07] suitable for the intended purpose of comprising a fiber with controlled waveform distortion due to non-linearity and a waveform distortion due to dispersion [Abstract] for good optical transmission line performance.

Mukasa is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to add/combine the above limitations as a results effective

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variable(s) to achieve controlled waveform distortion due to non-linearity and a waveform distortion due to dispersion for good optical transmission line performance.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Mukasa with the above limitations to achieve controlled waveform distortion due to non-linearity and a waveform distortion due to dispersion for good optical transmission line performance.

As to claim 3, Mukasa, as combined above, teaches the optical waveguide fiber of claim 1 wherein the dispersion slope is less than $0.025 \text{ ps/nm}^2/\text{km}$ at every wavelength between about 1525 nm and 1700 nm [entire patent, especially tables at col. 13, lines 24-34, col. 14, lines 46-55, col. 16, lines 19-30, col. 17, lines 1-14, col. 20, lines 27-50].

As to claim 4, Mukasa, as combined above, teaches the optical waveguide fiber of claim 1 wherein the absolute magnitude of the dispersion is less than 10 ps/nm/km at every wavelength between about 1310 nm and 1700 nm [entire patent, especially tables at col. 13, lines 24-34, col. 14, lines 46-55, col. 16, lines 19-30, col. 17, lines 1-14, col. 20, lines 27-50].

As to claim 5, Mukasa, as combined above, teaches the optical waveguide fiber of claim 1 further comprising a first annular core region surrounding and immediately

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adjacent the central core region, the first annular core region having a minimum relative refractive index percent, Δ , MIN between about -0.3% and -0.4% [entire patent, especially tables at col. 13, lines 24-34, col. 14, lines 46-55, col. 16, lines 19-30, col. 17, lines 1-14, col. 20, lines 27-50].

As to claim 6, Mukasa, as combined above, teaches the optical waveguide fiber of claim 1 wherein the fiber has zero dispersion wavelength less than about 1400 nm [entire patent, especially tables at col. 13, lines 24-34, col. 14, lines 46-55, col. 16, lines 19-30, col. 17, lines 1-14, col. 20, lines 27-50].

As to claim 7, Mukasa, as combined above, teaches the optical waveguide fiber of claim 1 wherein the fiber has a cabled cutoff wavelength of less than about 1260 nm [entire patent, especially tables at col. 13, lines 24-34, col. 14, lines 46-55, col. 16, lines 19-30, col. 17, lines 1-14, col. 20, lines 27-50].

As to claim 8, Mukasa, as combined above, teaches the optical waveguide fiber of claim 1 wherein the fiber has an effective area of greater than about $40 \mu\text{m}^2$ at a wavelength of about 1550 nm [entire patent, especially tables at col. 13, lines 24-34, col. 14, lines 46-55, col. 16, lines 19-30, col. 17, lines 1-14, col. 20, lines 27-50].

As to claim 9, Mukasa, as combined above, teaches the optical waveguide fiber of claim 1 wherein the fiber has a pin array bending loss less than about 8 dB at a

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wavelength of about 1550 nm [entire patent, especially tables at col. 13, lines 24-34, col. 14, lines 46-55, col. 16, lines 19-30, col. 17, lines 1-14, col. 20, lines 27-50].

As to claim 10, Mukasa, as combined above, teaches the optical waveguide fiber of claim 1 wherein the fiber has a pin array bending loss less than about 5 dB at a wavelength of about 1550 nm [entire patent, especially tables at col. 13, lines 24-34, col. 14, lines 46-55, col. 16, lines 19-30, col. 17, lines 1-14, col. 20, lines 27-50].

As to claim 11, Mukasa, as combined above, teaches the optical waveguide fiber of claim 1 wherein the fiber has a pin array bending loss less than about 15 dB at a wavelength of about 1600 nm [entire patent, especially tables at col. 13, lines 24-34, col. 14, lines 46-55, col. 16, lines 19-30, col. 17, lines 1-14, col. 20, lines 27-50].

As to claim 12, Mukasa, as combined above, teaches the optical waveguide fiber of claim 1 wherein the optical fiber further comprises: a first annular core region immediately adjacent and surrounding the central region and having a negative relative refractive index percent, $\Delta_2(r)$, with a minimum relative refractive index percent, $\Delta_{2,MIN}$; a second annular core region immediately adjacent and surrounding the first annular core region and having a positive relative refractive index percent, $\Delta_3(r)$ with a maximum relative refractive index percent, $\Delta_{3,MAX}$; and a third annular core region immediately adjacent and surrounding the second annular core region and disposed between the second annular

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core region and the outer annular cladding region, the third annular core region having a negative relative refractive index percent, $\Delta(r)$ with a minimum relative refractive index percent, Δ_{MIN} , negative relative refractive index percent, $\Delta(r)$ with a minimum relative refractive index percent, Δ_{MIN} ; wherein the central core region extends radially outward from the centerline and has a positive relative refractive index percent, $\Delta(r)$ with a maximum relative refractive index percent, Δ_{MAX} ; and wherein the outer annular cladding region surrounds and is immediately adjacent the third annular core region and has a relative refractive index percent, $\Delta(r)$ [entire patent, especially tables at col. 13, lines 24-34, col. 14, lines 46-55, col. 16, lines 19-30, col. 17, lines 1-14, col. 20, lines 27-50].

As to claim 13, Mukasa, as combined above, teaches the optical waveguide fiber of claim 12 wherein the central core region has an alpha less than 3.5 [entire patent, especially tables at col. 13, lines 24-34, col. 14, lines 46-55, col. 16, lines 19-30, col. 17, lines 1-14, col. 20, lines 27-50].

As to claim 14, Mukasa, as combined above, teaches the optical waveguide fiber of claim 12 wherein Δ_{MAX} is between about 0.5% and 0.7% [entire patent, especially tables at col. 13, lines 24-34, col. 14, lines 46-55, col. 16, lines 19-30, col. 17, lines 1-14, col. 20, lines 27-50].

As to claim 15, Mukasa, as combined above, teaches the optical waveguide fiber of claim 12 wherein the central region has a radius of between about 3 μm and about 5 μm [entire patent, especially tables at col. 13, lines 24-34, col. 14, lines 46-55, col. 16, lines 19-30, col. 17, lines 1-14, col. 20, lines 27-50].

As to claim 16, Mukasa, as combined above, teaches the optical waveguide fiber of claim 12 wherein $\Delta_{\text{sub.2,MIN}}$ is between about -0.2% and -0.5% [entire patent, especially tables at col. 13, lines 24-34, col. 14, lines 46-55, col. 16, lines 19-30, col. 17, lines 1-14, col. 20, lines 27-50].

As to claim 17, Mukasa, as combined above, teaches the optical waveguide fiber of claim 12 wherein the first annular core region has a width of between about 1 μm and 5 μm and a midpoint between about 3 μm and 7 μm , wherein the second annular core region has a width of between about 3 μm and 7 μm and a midpoint between about 7 μm and 11 μm , and wherein the third annular core region has a width of between about 2 μm and 6 μm and a midpoint between about 11 μm and 15 μm [entire patent, especially tables at col. 13, lines 24-34, col. 14, lines 46-55, col. 16, lines 19-30, col. 17, lines 1-14, col. 20, lines 27-50].

As to claim 18, Mukasa, as combined above, teaches the optical waveguide fiber of claim 12 wherein $\Delta_{\text{sub.3,MAX}}$ is between about 0.1% and 0.3% [entire

patent, especially tables at col. 13, lines 24-34, col. 14, lines 46-55, col. 16, lines 19-30, col. 17, lines 1-14, col. 20, lines 27-50].

As to claim 19, Mukasa, as combined above, teaches the optical waveguide fiber of claim 12 wherein Δn is between about -0.03% and -0.2% [entire patent, especially tables at col. 13, lines 24-34, col. 14, lines 46-55, col. 16, lines 19-30, col. 17, lines 1-14, col. 20, lines 27-50].

As to claim 20, Mukasa, as combined above, teaches an optical transmission line comprising the optical waveguide fiber of claim 1 which is considered to render the claimed optical transmission system obvious, since optical transmission line fibers [title] are specifically designed for use in optical transmission systems [entire patent, especially tables at col. 13, lines 24-34, col. 14, lines 46-55, col. 16, lines 19-30, col. 17, lines 1-14, col. 20, lines 27-50].

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L. Rude whose telephone number is (571) 272-2301. The examiner can normally be reached on Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Timothy L Rude
Examiner
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tlr